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EXAMINER

ROSENBERG, LAURA B

ART UNIT	PAPER NUMBER
3616	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/930,480

Applicant(s)

BOHLEN ET AL.

Examiner

Laura B Rosenberg

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Nw

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,7,9-11,13-16,18,20,23-30 and 32-35 is/are rejected.
- 7) ☒ Claim(s) 3,5,8,12,17,19,21,22 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment after final received on October 14, 2003, in which claims 1 and 25 were amended, has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 6, 25, and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (4,901,592). In regards to claims 1, 25, and 32, Ito et al. disclose a steering column for a motor vehicle having a steering shaft (#2) rotatably mounted in a tubular jacket (#6), wherein the tubular jacket is secured in use at a “vehicle bodywork end” of the tubular jacket (portion of #6 that is near the vehicle body #10) on two rails (side walls of #21) extending substantially in an axial direction, the tubular jacket being guided between the rails in the event of an axial displacement (best seen in figures 2, 3). Each rail is provided with a deformation element (each side of #30 is attached to each side of #21) plastically deformable and secured at least at one end (#30a) on a respective rail (best seen in figures 2, 3) with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via

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deflector structure (including #34 and portion of #6 connected with deformation element) fixedly disposed on the tubular jacket (column 4, lines 25-30, 47-53).

In regards to claim 6, Ito et al. disclose the rails being formed with slots (#31) extending substantially axially for accommodating longitudinal adjustment of the tubular jacket. Specifically, each side of the deformation element (#30), which is part of the rails in the area where each side is attached to each rail, is formed with a slot (#31).

In regards to claim 33, Ito et al. disclose the first and second deformation elements (each side of #30) being disposed at respective opposite sides of the tubular jacket (best seen in figures 2, 4).

In regards to claim 34, Ito et al. disclose the deflection structure including respective bolts (#23) carried by the tubular jacket, which in use are partially wrapped by the respective deformation elements (each side of #30 is wrapped around a portion of bolt #23; best seen in figures 2, 3).

In regards to claim 35, Ito et al. disclose the deflection structure including respective "housing edges" (including portions of #33, 34) on the tubular jacket.

4. Claims 1, 10, 15, 20, 25, 28-30, and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamasaki et al. (4,838,576). In regards to claims 1, 25, and 32 Hamasaki et al. disclose a steering column for a motor vehicle having a steering shaft (#1) rotatably mounted in a tubular jacket (#3), wherein the tubular jacket is secured in use at a "vehicle bodywork end" of the tubular jacket (portion of #3 that is near the vehicle body) on two rails (#4a, 4b, and side walls of #8) extending substantially in an

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axial direction (best seen in figure 1), the tubular jacket being guided between the rails in the event of an axial displacement. Each rail is provided with a deformation element (#6; only one deformation element shown in the figures) plastically deformable and secured at least at one end (near #6a) on a respective rail (best seen in figures 2, 4) with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via deflector structure (including #9) fixedly disposed on the tubular jacket (via connection with #4).

In regards to claims 10 and 28, Hamasaki et al. disclose the at least one deformation element (#6) including a sheet metal strip (column 4, lines 42-44).

In regards to claims 15, 20, 29, 30, and 35, Hamasaki et al. disclose the deflector structure including bolts (#7; only one is shown) and "housing edges "(including edges of #4, 5, 8, 9) on the tubular jacket (#3).

In regards to claim 33, Hamasaki et al. disclose the first and second deformation elements (#6) being disposed at respective opposite sides of the tubular jacket (second deformation element not shown, but would be on opposite side of tubular jacket as best seen in figure 2).

In regards to claim 34, Hamasaki et al. disclose the deflection structure including respective bolts (#7) carried by the tubular jacket, which in use are partially "wrapped" by the respective deformation elements (#6; best seen in figure 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 4, 7, 9, 24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (4,901,592) in view of Hancock (5,517,877). In regards to claims 2, 4, 26, and 27, Ito et al. do not disclose the use of shearing pins to fix the tubular jacket on the rails. Hancock teaches a steering column (#50) for a motor vehicle having a steering shaft (#3) rotatably mounted in a tubular jacket (#4), wherein the tubular jacket is secured in use at a vehicle bodywork end (portion of #4 near #6) on two rails (side walls of #8, best seen connected to tubular jacket in figure 1) extending substantially in an axial direction, the tubular jacket being guided between the rails in the event of an axial displacement. Each rail is provided with a deformation element (#7, 7A) plastically deformable and secured at least at one end (best seen secured to #8 in figure 2) on a respective rail, with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via deflector structure (#9, 10) fixedly disposed on the tubular jacket (column 2, lines 61-62; column 3, lines 5-10). The tubular jacket (#4) is fixed on the rails via plastic shearing pins (#18) that are releasable from one of the tubular jacket and the rails under a predetermined force (column 3, lines 39-43). It would have been obvious to one skilled in the art at the

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time that the invention was made to modify the steering column of Ito et al. such that it comprised shearing pins as claimed in view of the teachings of Hancock so as to connect the tubular jacket and the rails with fixing means that are secure during normal driving conditions, yet can be broken and absorb energy during a vehicle collision when an occupant comes in contact with the steering wheel and creates excessive force on the steering column.

In regards to claims 7 and 9, Ito et al. disclose the rails being formed with slots (#31) extending substantially axially for accommodating longitudinal adjustment of the tubular jacket. Specifically, each side of the deformation element (#30), which is part of the rails in the area where each side is attached to each rail, is formed with a slot (#31).

In regards to claim 24, Ito et al. do not disclose energy absorbable by the deformation element being able to be set by varying the material, material thickness or width of the deformation element, the radii of the deflection means, and/or the distance between the deflector structure. Hancock teaches that the energy absorbable by the deformation element can be set by varying the material thickness or width of the deformation element (column 3, lines 51-53). It would have been obvious to one skilled in the art at the time that the invention was made to modify the deformation element of Ito et al. such that the energy absorbable by the deformation element can be set by varying the material thickness or width of the deformation element as claimed in view of the teachings of Hancock so as to vary the diameter of the deformation element depending on the energy to be absorbed (Hancock: column 3, lines 51-53).

7. Claims 2, 4, 11, 13, 16, 18, 24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamasaki et al. (4,838,576) in view of Hancock (5,517,877). In regards to claims 2, 4, 26, and 27, Hamasaki et al. do not disclose the use of shearing pins to fix the tubular jacket on the rails. Hancock teaches a steering column (#50) for a motor vehicle having a steering shaft (#3) rotatably mounted in a tubular jacket (#4), wherein the tubular jacket is secured in use at a vehicle bodywork end (portion of #4 near #6) on two rails (side walls of #8, best seen connected to tubular jacket in figure 1) extending substantially in an axial direction, the tubular jacket being guided between the rails in the event of an axial displacement. Each rail is provided with a deformation element (#7, 7A) plastically deformable and secured at least at one end (best seen secured to #8 in figure 2) on a respective rail, with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via deflector structure (#9, 10) fixedly disposed on the tubular jacket (column 2, lines 61-62; column 3, lines 5-10). The tubular jacket (#4) is fixed on the rails via plastic shearing pins (#18) that are releasable from one of the tubular jacket and the rails under a predetermined force (column 3, lines 39-43). It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Hamasaki et al. such that it comprised shearing pins as claimed in view of the teachings of Hancock so as to connect the tubular jacket and the rails with fixing means that are secure during normal driving conditions, yet can be broken and absorb energy

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during a vehicle collision when an occupant comes in contact with the steering wheel and creates excessive force on the steering column.

In regards to claims 11 and 13, Hamasaki et al. disclose the at least one deformation element (#6) including a sheet metal strip (column 4, lines 42-44).

In regards to claims 16 and 18, Hamasaki et al. disclose the deflector structure including bolts (#7; only one is shown) and "housing edges "(including edges of #4, 5, 8, 9) on the tubular jacket (#3).

In regards to claim 24, Hamasaki et al. do not disclose energy absorbable by the deformation element being able to be set by varying the material, material thickness or width of the deformation element, the radii of the deflection means, and/or the distance between the deflector structure. Hancock teaches that the energy absorbable by the deformation element can be set by varying the material thickness or width of the deformation element (column 3, lines 51-53). It would have been obvious to one skilled in the art at the time that the invention was made to modify the deformation element of Hamasaki et al. such that the energy absorbable by the deformation element can be set by varying the material thickness or width of the deformation element as claimed in view of the teachings of Hancock so as to vary the diameter of the deformation element depending on the energy to be absorbed (Hancock: column 3, lines 51-53).

8. Claims 10, 14, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (4,901,592) in view of Hamasaki et al. (4,838,576). In regards to claims 10, 14, and 28, Ito et al. do not disclose the at least one deformation

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element (#30) including a sheet metal strip. Hamasaki et al. teach at least one deformation element (#6) including a sheet metal strip (column 4, lines 42-44). It would have been obvious to one skilled in the art at the time that the invention was made to modify the at least one deformation element of Ito et al. such that it comprised a sheet metal strip as claimed in view of the teachings of Hamasaki et al. so as to effectively absorb energy when subjected to the bending, stretching, and friction associated with the impact of a driver's body with the steering wheel during a collision (Hamasaki et al.: column 5, lines 38-50).

9. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (4,901,592) in view of Hancock (5,517,877), further in view of Hamasaki et al. (4,838,576). In regards to claims 11 and 13, Ito et al. do not disclose the at least one deformation element (#30) including a sheet metal strip. Hamasaki et al. teach at least one deformation element (#6) including a sheet metal strip (column 4, lines 42-44). It would have been obvious to one skilled in the art at the time that the invention was made to modify the at least one deformation element of Ito et al. such that it comprised a sheet metal strip as claimed in view of the teachings of Hamasaki et al. so as to effectively absorb energy when subjected to the bending, stretching, and friction associated with the impact of a driver's body with the steering wheel during a collision (Hamasaki et al.: column 5, lines 38-50).

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10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (4,901,592). In regards to claim 23, Ito et al. do not disclose the travel distance of the tubular jacket in the event of an accident. It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Ito et al. such that it comprised a guiding of the tubular jacket between the rails through a forward travel of at least approximately 100 mm in the event of an accident as claimed since it has been held that discovering an optimum value as a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further, it would have been obvious to use a distance of at least 100 mm so as to allow energy to be efficiently absorbed during a collision.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamasaki et al. (4,838,576). In regards to claim 23, Hamasaki et al. do not disclose the travel distance of the tubular jacket in the event of an accident. It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Hamasaki et al. such that it comprised a guiding of the tubular jacket between the rails through a forward travel of at least approximately 100 mm in the event of an accident as claimed since it has been held that discovering an optimum value as a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further, it would have been obvious to use a distance of at least 100 mm so as to allow energy to be efficiently absorbed during a collision.

Allowable Subject Matter

12. Claims 3, 5, 8, 12, 17, 19, 21, 22, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: The allowable subject matter in claim 3 is the plastic shearing pins being injection molded through holes drilled in the rails and the tubular jacket. While the Hancock reference discloses plastic shearing pins injection molded through holes drilled in the rails, the shearing pins are not injection molded through holes drilled in the tubular jacket.

The allowable subject matter in claim 19 is the deflector structure including bolts and housing edge on the tubular jacket. While the Hamasaki et al. and Hancock references disclose bolt and housing edges on the tubular jacket, there is no motivation to combine these features of these references with the primary Ito et al. reference.

The allowable subject matter in claim 21 is at least one of radii or spacing between the deflector structure being variable and selectively settable.

The allowable subject matter in claim 31 is means for varying the position of the bolt and housing edge.

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Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamamoto and Tomaru et al. disclose energy absorbing members for steering columns.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura B Rosenberg whose telephone number is (703) 305-3135. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (703) 308-2089. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura B. Rosenberg
LBR

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